**Engineering Grand Challenge: Make Solar Energy More Economical**

1. Raspberries contain \_\_\_\_\_\_\_\_\_\_\_\_. These molecules use incident light to excite electrons that then flow into the TiO2.
   1. Chlorophyll
   2. Anthocyanins
   3. Iodine
   4. Indium Tin Oxide
   5. None of the above
2. The substrate for a solar panel must be transparent and electrically conductive. While regular glass is not conductive it can be made so by coating it with \_\_\_\_\_\_\_\_\_.
   1. Chlorophyll
   2. Anthocyanins
   3. Iodine
   4. Indium Tin Oxide
   5. None of the above
3. Using nanosized TiO2 for the dye sensitized solar panel has the following benefit.
   1. Nanosized TiO2 is cheap to produce.
   2. Nanosized TiO2 is simple to handle.
   3. Nanosized TiO2 increases surface area for attachment of the dye.
   4. Nanosized TiO2 reduces weight.
   5. None of the above
4. Which of the following is NOT a NAE grand challenge?
   1. Make solar energy economical
   2. Advance Health informatics
   3. Reverse engineer the brain
   4. Create new nanotechnology
   5. Provide access to clean water
5. The efficiency of the average solar cell currently available for private installation is approximately \_\_\_\_.
   1. 5%
   2. 15%
   3. 25%
   4. 35%
   5. 40%
6. Approximately 90% of the solar cells in use today are based on \_\_\_\_\_\_\_.
   1. Silicon
   2. Cadmium telluride
   3. Copper indium gallium selenide
   4. Organic materials
   5. Other

# Which of the following describe you?

Gender: **○** Female **○** Male

Hispanic/Latino: **○** Yes **○** No

Race/Ethnicity: **○** African-American or Black

**○** Asian or Pacific Islander

**○** American Indian or Alaska Native

**○** White

**○** Multi-racial

**○** Other (please specify): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Enrollment: ○ This is my first year in college ○ I am a transfer student ○ Other

# Matching information. We need to match your responses to other surveys you have taken. In order to match responses without directly identifying you, please provide the following details:

**Your initials** (including middle initial): \_\_\_\_\_\_\_\_\_\_\_

**Month** you were born: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_